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Get In or Get Out: The Impact of Financial Liberalization on China's Economic Growth

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Abstract

After the major system failure in 2008, policy makers have started to question about whether the western financial system is still an optimal choice. Continuing financial liberalization or restricting foreign banks from entering are two choices for the developing world to consider. Thus, it is important to know whether China's 2006 policy, which liberalizes China's banking sector, has had a positive impact on its economic growth. The theories and empirical findings in the current literature provide an ambiguous answer to the economic impact of foreign banks' presence. As such, this paper evaluates China's 2006 policy on economic growth by using the OLS regression model with quarterly time series data from 1998 to 2011. The main finding of this study is that there is a positive economic gain under the policy of financial liberalization. In fact, when the policy is in effect, one percentage-point increase in foreign banks' asset share in China will increase GDP by 3.78 percentage, supporting a recommendation for emerging countries like China to further open up their financial sector.

I. Introduction

It has been five years since the 2008 financial crisis hit the global market. Under the shadow of this financial catastrophe, the orthodoxy of western financial system was challenged and became a serious concern in the world. On the eve of this crisis, it is inevitable for developing nations to consider whether they should put more restrictions on foreign banks and protect their domestic banking system from invasion of the western world. China, the largest emerging nation in the developing world, should be one of the first countries to answer this question.

After Xiaoping Deng's economic reforms[1] in 1978, China amazed the world with its miraculous speed of GDP growth. As of today, China has become the second largest economy in the world both in terms of nominal GDP and purchasing power parity. With China's participation in numerous multinational organizations such as the United Nation (UN), World Trade Organization (WTO), Asia-Pacific Economic Cooperation (APEC) etc., there is no doubt that China has turned into one of the most influential countries in the world both economically and politically. Along with China's overall economy, the banking system in China is becoming more and more internationalized. Especially after China's accession to the WTO, the promise to open up China's financial sector completely led to a rapid expansion of foreign bank entry into China. Five years after China's accession to the WTO, in 2006, as promised, the State Council of People's Republic of China announced its first set of formal regulations vis-à-vis foreign banks, Decree No. 478[2]. This decree marked the complete openness of China's banking sector. As a result, the impact of this policy on China's economic growth should be an important reference in answering the question of

[1] In 1978, reformists of Communist party of China led by Deng Xiaoping started to introduce capitalist market principles into Chinese economy by opening up China to foreign investment, allowing entrepreneurs to start businesses and decollectivization of agriculture.

[2] The full name of Decree No. 478 is "Regulations of the People's Republic of China on Administration of Foreign-funded banks". (see http://www.cbrc.gov.cn/EngdocView.do?docID=2871)The purpose of this Decree is stated in Article 1 "These Regulations are formulated for the purpose of meeting the needs of opening up to the outside world and economic development, strengthening and improving supervision and regulation over foreign-funded banks, and promoting safe and sound operation of the banking industry." Some important regulations toward foreign-fund bank in Decree No. 478 are stated in here as well.

whether China should put more restrictions on foreign bank entry or continue to further liberalize its financial sector.

In order to understand the impact of this policy, it is important to know the progress of foreign banks' entry into China. In 1979, the beginning of China's financial liberalization was marked by China's abolishment of the ban on the entry of new foreign banks. Six years later, China announced that foreign banks were formally allowed to establish branches in China. Then, in 1994, foreign currency business was allowed to be conducted by foreign banks. In 1999, the Chinese Renminbi (RMB) business could finally be operated by foreign banks in any city in China. In 2001, not long after its openness on RMB business, China promised to open up its banking sector completely in five years during its accession to WTO. As promised, five years later, China opened up its banking sector completely in 2006 with the announcement of Decree No. 478. As a result, the number of operational foreign bank institutions has grown from 5 to 387 between 1979 and 2011 as shown in Figure 1.

Figure 1. Number of Operational Foreign Bank Institutions in China – 1979-2011

Economic theory provides contradictory predications of the effect of foreign banks' entry. On the one hand, according to Levine (1997), foreign banks' entry will cause bank competition and thus promote the efficient allocation of resources and quality of financial service for domestic banking sector; more developed banking supervision and legal framework can be established with stimulus from foreign banks; the existence of foreign banks gives credibility to the home country as well as the domestic banks, which provide access to international capital market. From this point of view, foreign banks' entry can

facilitate the growth of the economy, making the argument that the restrictions toward foreign banks should be removed. However, on the other hand, as discussed by Stiglitz (1993), foreign banks might also crowd out domestic banks because of better reputation and technology, which might cause local industries getting less financial service since foreign banks are mainly focusing on multinational firms. Besides, foreign banks' entry might cause domestic government having less control of the economy as well since foreign banks do not always perform as domestic government wished. Given this potential outcome, the infant industry argument would dictate that domestic bank should be protected, and foreign banks' entry should be restricted.

Ambiguous theoretical predictions are paralleled empirically as evidences about foreign banks' entry in developing countries also have two opposite conclusions regarding its impact on economic growth. On the one hand, there is much literature illustrating the benefit of foreign banks' entry both for developed and developing nations. First, Levine (2001) suggests that greater foreign bank presence can enhance the efficiency of domestic banks and accelerate productivity growth which leads to economic growth in the home country. Second, a study done by Bhattacharaya (1994) argues that foreign banks can help promote technology and the work ethic of domestic banking sector with high level of local commitment. In addition, the recent study of Li (2011) on foreign banks' entry in China also shows that the continuing entry of foreign banks will enhance the profit efficiency of domestic banks eventually. Complementing the works of Levine (2001), Bhattacharaya (1994) and Li (2011), De Haas & Lelyveld (2006)'s study on foreign banks in Central and Eastern Europe countries suggests that a home country's total credit supply can be stabilized by greenfield foreign bank[3]. Moreover, Beck et al. (2004) and Cetorelli & Gambera (2001) suggest the presence of foreign banks can ameliorate the harm on an economy caused by high bank concentration due to government interference and inefficient regulatory framework in home country. On the other hand, there is also literature highlighting the negative impacts of foreign bank presence. One of the main arguments against foreign bank entry is that that foreign banks have

[3] Foreign banks can enter either through Greenfield or by acquiring local banks (brownfield). Greenfield is a form of entry where foreign parent banks start a new venture in home country from ground up

handicap in using soft information[4] in their lending practice, which, cause domestic small businesses to be insufficiently funded and hurt national economic growth (Giannetti & Ongena (2009), Mian (2003) , Clarke et al. (2003)).

However, not all empirical studies demonstrate a clear positive or negative impact of foreign bank presence on a country's economic growth. There are also numerous studies that give both positive and negative arguments. According Unite & Sullivan (2003), who investigated the effect of foreign bank entry in Philippines, foreign banks' entry improved the efficiency of domestic banks but left the domestic banks' with economically weaker clients and higher risk. Claessens et al. (2001) show that foreign banks' entry reduces the profitability of domestic banks but, in the long run, the efficiency and customer welfare of the banking sector will be improved. Similarly, Seo, Chao & Park's (2013) study argues that foreign banks' entry in China causes bank competition and decrease the profitability of domestic banks but the overall efficiency of the Chinese banking sector is improved. Therefore, since both economic theories and empirical evidences give ambiguous conclusions about foreign banks' entry on economic growth, the actually impact of foreign banks' presence on China's economic growth remains uncertain. This paper tries to answer the question of the effect of financial liberalization on economic growth by focusing on China's 2006 policy vis-à-vis banking sector liberalization.

This study uses OLS regression method to test the relationship that exists between GDP growth and the policy associated with foreign bank presence in China, controlling for government intervention (investment in fixed asset and money supply), outward orientation (openness and FDI net inflow) and other macroeconomic indicators (inflation and central government debt). The study shows that this policy had a significant positive effect on China's economic growth. In particular, the results show that, when the policy is in effect, one percentage-point increase in foreign bank's asset share in China will increase GDP by 3.78 percentage, ceteris paribus.

[4] As opposed to hard information, which includes verifiable data and knowledge, soft information includes unquantifiable factors like feelings, opinions, perceptions and values.

The rest of the paper is structured as follows. Section II will explain the data and empirical model specification. Section III will discuss the results of the model. Results of some widely used tests for models will be discussed in Section IV. And section V will present conclusion along with policy implication.

II. Data and Empirical Model

This study makes use of quarterly time series data from 1998 fourth quarter to 2011 fourth quarter for China. The general economic and banking related data used for this research are compiled and calculated from the *Almanac of China's Finance and Banking* 1998-2012, IMF's *International Financial Statistics (IFS)* and the *National Bureau of Statistics of China.*

The natural logarithm of nominal GDP (lnGDP) is used as the dependent variable to measure GDP growth. By taking the logarithm of nominal GDP, the coefficient of each variable directly reflects the percentage growth of GDP. For the interest variable, foreign banks' asset share, both theory and previous empirical studies suggest an ambiguous impact on economic growth, as explained in the previous section. Hence, the expected sign of foreign banks' asset share is ambiguous and waiting for further research.

Before constructing the model that explains economic growth, it is important to understand the determinants of economic growth. There are various studies discussing these determinates. In particular, Arvanitidis, Petrakos & Pavleas (2007) give a very comprehensive summary of the determinants of economic growth and performance. In their paper, "Determinates of economic growth: the expert's view", with the support of a wide range of theories and empirical analyses, they suggest that the following factors are considered to have an impact on economic growth: investment, human capital, innovation, economic policies, macroeconomic condition, openness, foreign direct investment, institutional framework, political indicator, social-cultural factors, geography, as well as demographic trends.

Due to the limitation of data availability, variables used in this study only represent some of the factors mentioned above, reflecting two important theories in determining economic growth, neoclassical theory and structuralist theory. Neoclassical theory suggests that outward orientation, which measures a country's level of success usage of global connections and the level of responsiveness of other countries toward this success, is one of the major determinates of economic growth. To this effect, both openness (OPENNESS) and foreign direct investment (FDI) are used to measure outward orientation. Since the structuralist theory addresses the importance of government intervention, money supply (MSUPPLY) and investment in fixed asset[5] (INVEST) are used in the model as well[6]. In addition, inflation rate (INFL) and government debt ratio (DEBT) are used in the regression to control for macroeconomics condition.

As the policy under investigation advocates the complete openness of China's banking sector, the variable that measures the presence of foreign banks will be used as this study's interest variable. Usually, there are two ways of measuring foreign bank presence: one way is to use the number share of foreign banks (number of foreign banks divided by total number of banks); and another way is to use the asset share of foreign banks (Asset of foreign banks divided by total banking asset). As argued by Seo, et al. (2013), asset share of foreign banks (FASSET) should be used because of China's highly concentrated banking industry. In order to measure the effect of the 2006 policy, in particular, the final model includes a policy dummy (POLICY), which equals 0 for the years before the policy was enacted and equals 1 in 2006 and thereafter, and the interaction term (POFASSET) between policy dummy (POLICY) and asset share of foreign bank (FASSET) is also used for more accurate calculation about the impact of policy. As a result, the final regression model is defined in equation (1).

[5] Investment in fixed asset consists of both public and private investment in fixed asset. Because of data availability, we use investment in fixed asset as percentage of GDP to control for both government and investment spending.

[6] Economic growth models address generally human capital, but the policy of interest is particular to amount of physical capital as such it assumed that the impact of human capital is negligible for this study. What's more, the issue of data availability also constrained the research from controlling for human capital.

$$\ln(GDP) = \beta_0 + \beta_1 FASSET + \beta_2 POLICY + \beta_3 POFASSET + \beta_4 OPENNESS + \beta_5 FDI + \beta_6 INVEST + \beta_7 \ln(MSUPPLY) + \beta_8 INFL + \beta_9 DEBT + \mu \quad (1)$$

Since the original data of GDP is not seasonally adjusted, the underlying trends of the dependent variable are very likely to be masked. Therefore, in order to have a better reflection of the economic process that we are interested in, the raw data of the dependent variable is seasonally adjusted to eliminate original data's regular within-a-year influence. In addition, for the purpose of simplification of data and better interpretation of coefficients, the nature logarithm of money supply is used.

The summary of the expected effect of each variable can be found in *Table 1*. For OPENESS, previous literature has found a consistent positive correlation between openness and economic growth. (i.e. Awokuse (2008), Harrison (1996) and Yanikkaya (2003)). For FDI, Kowalski (2000) mentioned that FDI is positively correlated to growth because the private market is enhanced by this investment. Other empirical literature also gives consistent predictions suggesting a positive effect of FDI on economic growth. (i.e Alfaro etc. (2004), Giannetti & Ongena (2009), Li & Liu (2005) and Mottaleb (2007)). Thus, the presented outward orientation variables, OPENESS and FDI, are expected to have a positive sign in this study.

Investment in fixed asset (INVEST) and money supply (ln(MSUPPLY) are used as indicators of government intervention. While Kowalski (2000) suggests strong government intervention promotes economic growth, there are varying views with regards to both the effect of money supply and government spending on economic growth. For the money supply, IS-LM model suggests money supply has a positive effect on GDP growth in the short-run and no effect on GDP in the long run. In addition to theory, empirical result for the relationship between money supply and economics growth also remain ambiguous. Ahmed & Zakaria (2011) suggest no causal relationship between real GDP and money supply in the long run.

Investment in fixed asset, which measures both government spending and private investment, also has ambiguous empirical results. For government spending both Barro (2013)

and Landau (1983) indicated government spending harms economic growth, while Cashin (1995) found that government spending on productive public spending promotes economic growth. For private investment, Barro (2013) found a positive but not significant correlation between investment and economic growth, while Anwer & Sampath (1999) found evidence of both positive and negative causality from investment to GDP. Therefore, although the Chinese economy is known for its central planning system, and the positive correlation between government intervention and economic growth is more likely, the expected sign for these two indicators are still ambiguous waiting for further research.

As macroeconomic indicators two variables are presented, inflation (INFL) and government debt (DEBT). The view about the effect of inflation (INFL) on economic growth also has various perspectives. One argument is that inflation and economic growth are inversely related. (i.e. Andrés & Hernando (1999), Barro (2013) and Beck, Demirgüç-Kunt & Maksimovic (2004)), while other research shows that inflation and economic growth can be positively correlated (i.e. Sarel (1995) and Pollin & Zhu (2006)). With regards to government debt (DEBT) previous researches suggest an ambiguous relationship between central government debt and economic growth depending on whether debt-to-GDP ratio reached proposed cut-off points. (i.e. Checherita & Rother (2010) and Reinhart & Rogoff (2010)) Thus, the expected sign of both inflation and central government debt are ambiguous for this research.

III. Results of Regression Analysis

This econometric analysis were conducted using three different specifications in an OLS regression model and the results are presented in *Table 3*. The first regression model consists only of basic explanatory variables and the policy dummy. As shown in column (1) of Table 3, other than FDI and OPENESS, all the other variables are statistically significant at the 1 percent level. The model suggests that the GDP grew 9.76 percentage points during the years that the policy was implemented. This statistics tells us that year 2006 is an important year for China's economy. China's economy went through some important changes

that benefited the overall economy, but more analysis is needed in order to tell if it is the financial liberalization policy that contributes to the economic growth. Both fixed asset investment and government debt, suggested by the negative sign of coefficient, had negative impacts on China's economy, which could be caused by a crowing out effect[7] of government spending. Money supply and inflation are said to be positively correlated to economic growth as expected. Both coefficients of FDI inflows and openness are positive as expected but are not statistically significant.

The second model specification includes variables in the first specification in addition to the variable of interest, foreign banks' asset share, with results presented in column (2) of *Table 3*. In this model, openness and FDI are not statistically significant, while foreign banks' asset share, inflation, fixed asset investment and government debt are statistically significant at the 5 percent level or higher. The coefficient of foreign banks' asset share states that one percent increase in foreign banks' asset share will increase GDP by 5.7 percentage. This result is consistent with studies and theories which believe the presence of foreign bank can promote economic growth.

The third and final regression model adds in the interaction term between the policy dummy and foreign banks' asset share. As shown in column (3) of *Table 3*, most variables are statistically significant except the policy dummy, inflation and FDI. The change in significance level of policy and inflation suggest that this model has some multiconlinearity issue, which is expected due to the use of the interaction term. The final model has a R^2 statistics of 0.998[8] indicating that 99.8 percent of variance in GDP growth can be explained by this model, and it is also the highest among all specifications. This model shows that when the 2006 policy was in effect, one percentage-point increase in foreign banks' asset share increased GDP by 3.78 percentage point. This result illustrates that the specific policy addressed in this paper has a significant positive impact on China's economic growth. In

[7] An increase in government spending could leads to a deficit that is financed by increased borrowing, which could increase interest rates, leading to a reduction in private investment.

[8] This is a really high R square statistics. There are several reasons of this. First, variables like OPENNESS are used to calculate GDP directly. Second, final model does suffer from multiconlinearity problem. Last but not the least, the policy dummy variable might pick up unmeasured variable left out in the model.

other words, in the year where the policy is instituted, increase in foreign bank presence led to an increase in economic growth.[9]

Aside from the results associated with the 2006 policy, some side conclusions can also be derived.. As presented in *Table 3*, both variables for debt ratio and money supply are statistically significant at the 1 percent level throughout all models. DEBT has a consistent negative coefficient, while ln(MSUPPLY) has a consistent positive coefficient. These results imply that debt financing should not be encouraged in China, and policies like quantitative easing, which increase money supply, can be implemented to promote economic growth in China.

IV. Statistical Tests

Since *Table 3* presents results of an OLS regression with robust standard errors, meaning that the errors of the models are adjusted to be independent and identically distributed, it is important to make sure that these assumptions of OLS hold. Table *A2* in the appendix presents results of some statistical tests necessary for an OLS analysis for each model specification. As shown in column (1) - (3) of *Table A2*, models used for this study pass the Breusch-Pagan test and Jarque-Bera test, which suggest that the models do not have issues of heteroscedasticity and the sample data is normally distributed. Additionally, the first two models have mean VIF[10] value of 3.43 and 5.43, respectively, which suggest multicollinearity is not a problem. The third/final regression model includes the interaction term in order to examine the impact of policy, and its relatively large mean VIF value of 30.09 suggests the problem multicollinearity. Although the third model presents potential multicollinearity issue, it is mainly caused by the involvement of the interaction term, which is inevitable due to the fact that the interaction term is *supposed* to be collinear with the policy dummy by definition. Moreover, as suggested by the results of the Breusch-Godfrey Test, the time series data for

[9] It should be noted that some policies may have occurred in 2006 simultaneously. Such fact it addressed in the section for future research.

[10] The mean VIF value quantifies the severity of multicollinearity. The higher the mean VIF value, the more severe the problem of multicollinearity is.

this study presents the problem of serial correlation. In order to address the serial correlation problem, the Newey-West standard errors are used for regression, and the result is presented in *A3*, which do not deviate much from results using robust standard errors.

V. Conclusion, Policy Implication and Future Research

V.1 Conclusion & Policy implication

This empirical study aims to answer the question of whether China's 2006 policy, which opens up China's banking sector, has the desired positive impact on China's economic growth. The main finding of the study is that this policy does have some positive impacts on China's overall economic growth. The study shows that, when the policy is in effect, one percentage point of increase in foreign banks' asset share will increase GDP by 3.78 percentage point.[11] Although the potential economic gain is significant, it is unlikely to continue since China's domestic banks are growing faster than foreign banks. It is hard for foreign banks' to gain more asset shares in China's banking sector, which is possibly due to foreign banks' handicap in using soft information. Since China's financial institutions are not as advanced as the developed world, failure to use soft information creates some serious obstacle for foreign banks in China in obtaining market share. Besides, since China abolished the policy which provided tax benefit to foreign institutions in 2011combined with foreign bank's business limitation in the non-banking sectors (foreign banks are not allowed to conduct automobile lending practices), it is very hard for foreign banks' asset share to increase even slightly.

However, the potential economic growth presented by this study does create some policy implication for China. There is no doubt that the presence of foreign banks can promote economic growth in China. Thus, it is reasonable to believe that policies that further internationalize China's banking sector can stimulate China's economic growth significantly.

[11] The positive effect of foreign bank could be caused by increased overall banking efficiency due to more competition as well as knowledge spillover effects, which allows China's financial industry to allocate resources more effectively.

Nevertheless, in order to have a policy that works more effectively, China should improve its financial institutions[12] as soon as possible. In addition, the consistent significant results of debt and money supply lead to the policy suggestions of debt avoidance and increase use of monetary policy to boost economic growth.

V.2 Future Research and Next Steps

Despite the meaningful results this study provides, there are still some limitations to this research. The first limitation is the relatively small sample size. Quarterly data is the most frequent data available, which leads to only 52 complete observations in the regression. As a result, there is a possibility that the result of this research is data driven, since small dataset might cause the predication of regression model to be biased. Another limitation is the problem of multiconlinearity, the inevitable collinearity of the interaction term caused by its definition, leads to insignificance of statistics. What's more, this paper only tests the correlation between variables without having the endogeneity test. Therefore, this paper does not determine whether there is a casual relation between the 2006 policy and economic growth without eliminating possible reverse causality.

Hence, future research should incorporate more frequent observations (i.e. monthly data) to have a bigger dataset from which to make more accurate predictions. In order to minimize the discrepancy caused by multiconlinearity, the continued research should also try other different model specification with different variable sets. In addition, it is also recommended for future research to test the casual relationship between variables by adopting other econometric methodologies such as IV estimations and generalized least square (GLS) regressions. Last but not least, it would also be interesting to look for what else happened in China in 2006 as the regression results generated so far have a relatively large coefficient for the policy dummy, which implies there might be something else that promoted China's economic growth in 2006 and afterwards.

[12] Some institutional improvement could be erasing corruption, barriers to entry and improving banking system regulation, etc.

Table 1: Expect Effects of Explanatory Variables

Name used in Regression	Variable Name	Expected sign/effect on GDP growth
FASSET	Foreign banks' asset share	Ambiguous
OPENESS	Openness	"+"/positive
FDI	Foreign Direct Investment	"+"/positive
MSUPPLY	Money supply (M2)	Ambiguous
INVEST	Investment in Fixed Asset	Ambiguous
INFL	Inflation	Ambiguous
DEBT	Central government debt	Ambiguous

Table 2: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
lnGDP	52	10.744	.538	9.951	11.669
FASSET	52	1.857	.314	1.266	2.412
POLICY	52	0.443	.502	0	1
OPENNESS	52	50.335	11.497	27.854	71.781
FDI	52	2.737	.902	1.288	4.583
ln(MSUPPLY)	52	12.531	.617	11.557	13.577
INVEST	52	39.205	17.153	10.766	78.069
INFL	52	1.879	2.582	-2.054	8.035
DEBT	52	38.269	7.093	18.865	54.914

Table 3: Robustness OLS Regression Results

	(1)	(2)	(3)
VARIABLES	lnGDP	lnGDP	lnGDP
FASSET		0.0570***	0.0437***
		(0.0165)	(0.0151)
POLICY	0.0976***	0.0767***	-0.0938
	(0.0214)	(0.0193)	(0.0696)
POFASSET			0.0879**
			(0.0355)
OPENESS	0.000244	0.000667	0.000981*
	(0.000565)	(0.000545)	(0.000554)
FDI	0.00974	0.00975	0.00957
	(0.00861)	(0.00778)	(0.00771)
INVEST	-0.00162***	-0.00198***	-0.00190***
	(0.000404)	(0.000428)	(0.000440)
INFL	0.0104***	0.00647**	0.00234
	(0.00281)	(0.00288)	(0.00315)
DEBT	-0.00427***	-0.00328***	-0.00347***
	(0.000671)	(0.000606)	(0.000582)
ln(MSUPPLY)	0.838***	0.856***	0.861***
	(0.0226)	(0.0210)	(0.0204)
Constant	0.363	0.00789	-0.0390
	(0.260)	(0.253)	(0.244)
Observations	52	52	52
R-squared	0.997	0.997	0.998

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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Appendix

A1: Summary of variables

Variable	Description	Formula used	Source
lnGDP	GDP growth	The nature logarithm of the nominal GDP in 100 million Chinese Yuan, seasonally adjusted	National Bureau of Statistics of China
FASSET	Foreign banks' asset share	The ratio of foreign banks' assets to China's financial institutions' total asset	Almanac of China's Finance and Banking
OPENNESS	Openness	Ratio of sum of export and import to GDP	National Bureau of Statistics of China
FDI	Foreign Direct Investment	Ratio of foreign direct investment net inflow to GDP	National Bureau of Statistics of China
ln(MSUPPLY)	Growth of Money supply	The nature logarithm of the M2 in 100 million Chinese Yuan	IFS
INVEST	Investment in fixed asset	Fixed asset investment as percentage of GDP	National Bureau of Statistics of China
INFL	Inflation	Percentage change of CPI	IFS
DEBT	Central government debt	Ratio of Central government gross debt to GDP	IFS

A2: Summary of tests

Name of test	(1)	(2)	(3)
Breusch-Pagan Test	P= 0.3463/ Pass	P=0.2554 /Pass	P= 0.1551 /Pass
Mean VIF	3.43	5.43	30.09
Jarque-Bera test	P=0.3463/Pass	P=0.5260 /Pass	P= 0.6413/Pass
Breusch-Godfrey Test (lag(4))	P=0.0045/Not Pass	P=0.0008/Not Pass	P=0.0000/Not Pass

A3: OLS Regressions with Newey-West standard errors (lag (4))

	(1)	(2)	(3)
VARIABLES	lnGDP	lnGDP	lnGDP
FASSET		0.0570***	0.0437***
		(0.0184)	(0.0161)
POLICY	0.0976***	0.0767***	-0.0938
	(0.0268)	(0.0184)	(0.0571)
POFASSET			0.0879***
			(0.0273)
OPENNESS	0.000244	0.000667	0.000981**
	(0.000557)	(0.000439)	(0.000384)
FDI	0.00974	0.00975	0.00957
	(0.00611)	(0.00673)	(0.00666)
INVEST	-0.00162***	-0.00198***	-0.00190***
	(0.000394)	(0.000475)	(0.000475)
INFL	0.0104***	0.00647**	0.00234
	(0.00276)	(0.00246)	(0.00270)
DEBT	-0.00427***	-0.00328***	-0.00347***
	(0.000703)	(0.000465)	(0.000423)
M2	0.838***	0.856***	0.861***
	(0.0227)	(0.0202)	(0.0182)
Constant	0.363	0.00789	-0.0390
	(0.246)	(0.240)	(0.221)
Observations	52	52	52

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1